Please use this form to document your comments to Appendix B, Entrainment. Please number your comments in the first column and indicate the page, section, and line number (if provided) that reference the comment's location in the review document.

To be of the greatest value to the document development process, please make your comments as specific as possible (e.g., rather than stating that more current information is available regarding a topic, provide the additional information [or indicate where it may be acquired]; rather than indicating that you disagree with a statement, indicate why you disagree with the statement and recommend alternative text for the statement). Do not enter information in the Resolution column.

Document: Appendix B, Entrainment						**Date Comments Requested by: 9/9/2011**
Comments Submitted By: Federal Agencies			**Affiliation:**			**Date Comments Submitted: 9/9/2011**
NO.	**SECTION #**	**PAGE #**	**LINE #**	**COMMENT**	**Agency**	**RESOLUTION**
1	Appendix B.0	Summary Page B-1	Footnote 1	"Additional modeling is underway of an additional water operation called Scenario 6,…". Suggest to insert the word water.	USFWS	
2	Appendix B.0	Summary Page B-10	19	Suggest to change 'along-bank' to on-bank.	USFWS	
3	Appendix B.0	Overall	Overall	There was an oversight in numbering the lines of pages for review. Lines on some of the pages were not numbered.	USFWS	
4	Appendix B.0	B-2 through 3	3-15 and 1-8	Recommend citing Table B-5. This table is a visual representation of this bullet points.	USFWS	
5	Appendix B.0	B-ii	52	Larva, should be more specific to say that it is Particle-tracking results, rather than Screening Effectiveness Analysis as the header on line 49 indicates. There is some inconsistency here with the headers on page B-305.	USFWS	
6	Appendix B.1	Overall	Overall	SWP/CVP prefixes are used in the naming system for most of the covered activities within the BDCP Entrainment Appendix. Is this appropriate for all cases of use?	USFWS	
7	Appendix B.0	Overall	Overall	Conceptual model of entrainment: are there any behavioral factors for each species that would affect that would affect entrainment potential, e.g. feeding or reproductive behaviors? If so, these should be explicited stated in the document	USFWS	
8		B-5	19-20	The appendix rightly states that the current system of salvage, that is louvers, screens and Capture-Handling-Trucking-Release, is not efficient at "salvaging" delta smelt. Because of this, the Service considers all entrained delta smelt as mortalities (p. B-5, lines 19-20). The reviewer proposes that any plans that mimic or resemble the current system would similarly be ineffective.	USFWS	
9		B-7	21	Please provide the citations for those data that suggest a nonlinear increase in entrainment as diversions increase.	USFWS	

10		B-10	17-19	Appendix B addresses that there is little known about loss of fish due to entrainment and submits that monitoring will be used to determine this at the north Delta intakes. Does the effects analysis describe this monitoring program? Should it be part of this appendix?	USFWS	
11		B-12		References to significant water supply economic costs is unnecessary and inappropriate for a technical appendix.	USFWS	
12		B-12		Entrainment of delta smelt due to the south Delta intakes may have decreased over time not only as a result of water operations management (p. B-12, top of page), but due to the decrease in population.	USFWS	
13		B-16	1st para	This is the first I've heard of an additional alternative intake to the Barker Slough pumping plant. However, it seems a misnomer to call it "alternative," because as I read it, this is another dual conveyance, where the new intake will be "operated to help meet water demands," which I do not believe was the intent of the CALFED ROD, which was to move an intake out of Barker Slough to alleviate negative effects of delta smelt.	USFWS	
14		B-27	6-7	The proposed project is expected to increase the total amount of water exported. How will the resultant impact to delta smelt critical habitat be evaluated?	USFWS	
15		B-27		The appendix clearly states (p. B-27, line 6-7) that the proposed project is expected to increase the total amount of water exported over existing conditions. What is the plan for characterizing this impact?	USFWS	
16		B-28		The title to table 3 is unclear; average monthly *what*?	USFWS	
17	B.3.4.2	B-37		SALVAGE DENSITY METHOD- Normalized to population size B.3.4.2 (p. B-37): raw monthly salvage * the population size of that year/average population size in the years from which salvage data was available (1996-2006). This doesn't look right. I understand normalized salvage to be salvage/pfmwt. Perhaps it is written incorrectly and they intended to multiply by the reciprocal. So it is either the wrong method or badly described in the text.	USFWS	
18	B3.4.5.1	B-40	10-21	Are 1996-2010 densities a "good" use to characterize splittail salvage? What about 2011?	USFWS	
19		B-48	6	From what study do the secchi depths come?	USFWS	
20		B-50	1st para	"Recent data indicates that between 20% and 80% of delta smelt (adults and larvae- juveniles) are found in areas not sampled by the surveys." This is used as justification for Miller's adjustment of entrainment down. If this is true, the adjustment should be better described and justified and the source should be cited or eliminated.	USFWS	

21		B-168	10-14	It would be helpful for the reviewer to see the "starting distributions" (ie. Uniform, Dry all female February, etc) data sets used for completeness and assessment of results. This is paramount, because using the SKT data to describe spawning area is incomplete, as can be deduced from the subsequent 20mm distribution data.	USFWS	
22		B-168	35-37	What is an appropriate number of runs for this analysis? The table gives between 5 and 9. Is there any change as a result of fewer or more runs?	USFWS	
23		B-189	Table B-133	How does including these maximum flows affect the results?	USFWS	
24		B-305	15-19	USFWS Delta Juvenile Fish Monitoring Program samples upstream of Hood. While they primarily use seines, the collected data would provide information on presence/absence of delta smelt and could be correlated with WY type. It should also be used to support or dismiss the statement smelt "occur infrequently" in this area.	USFWS	
25		B-305		It is possible that we misunderstanding the draft position on entrainment and impingement of delta smelt (as described above). We provide the statement on page B-305, lines 25-27 as support of this characterization: Larval delta smelt would become increasingly susceptible to entrainment at sizes below 15 mm, whereas larger larvae **would be less likely to be entrained but could be impinged on the screens** (emphasis added). If this is a misinterpretation by the reviewer, the document could be greatly improved by addressing this point directly.	USFWS	
26		B-317	36-37	I would not have come to the same conclusion. These are the same risks as delta smelt, and the document does not dismiss the loss as "negligible." Without further support, this statement appears to be conjecture.	USFWS	
27		B-318	6-7	The description of decreased entrainment loss under the proposed project for the NBA intakes is based on habitat restoration, but I'm not aware of the data used to validate this.	USFWS	
28		B-327	15	This sentence says "delta smelt" but it is supposed to say "longfin smelt," and the statement may not be true for longfin smelt.	USFWS	
29		B-348	10-11	The document does say that this is an oversimplification, but the reviewer cannot effectively review or evaluate the effects with overly simple inputs.	USFWS	
30		B-349	Table B-253	This table seems overly simple.	USFWS	
31		B-8	Figure B-1	Under the bullet 'Habitat preferences affect proximity', it would be more appropriate to read '*for intakes on-bank, littoral species on the shoreline may be more susceptible than pelagic species [Nobriga et al. 2004]; … [Grimaldo et al. 2009])*'.	USFWS	

32	Appendix B.0.	Summary		Need to support assumptions about North Delta diversion 100% screening success with the PP's screening design in numerous locations within the appendix. Is there literature of similar success in other diversions?	USFWS	
33	Appendix B.0.	Summary		We remain confused about the draft position on entrainment and impingement of delta smelt. While fish entrainment (based on PTM runs) may decrease under the dual conveyance, in that fish-laden water being *pulled* to an intake is lessened, those delta smelt that were upstream of the north Delta intake can, and in many cases will, be impinged. Yes, unlike the south Delta pumps, the direction of flow along the north Delta intake will be going in the "natural" downstream direction. However, delta smelt are still in a body of water that is influenced by the adjacent intake. We are concerned that uncertainties associated with impingement and entrainment at the North Delta facilities is not fully examined or discussed.	USFWS	
34		B-8	Figure B-1	The conceptual model diagram is missing the 'proximity to the intake' relationship with 'Entrainment and Impingement Loss of Covered Fish Species' that was discussed in the text, which is important for understanding losses related to impingement.	USFWS	
35		B-524	Table B-2	find a way to code the table so that it's clear which + and – apply to each analysis.	USFWS	
36	Appendix B.0	B-1	9-11	Water intakes result in at least 3 direct effects: entrainment, impingement and predation. Impingement and predation losses can also be significant at, or near, water diversions or reservoirs and require detailed quantification to evaluate total direct effects of water diversions on fish.	USFWS	
37	Appendix B.0	B-1	20-24	Nonethess they still are very uncertain tools to quantify the magnitude of total entrainment losses. Process oriented approaches to quantify entrainment losees are are jstill required and should greatly complement availableapproaches. Empirical evaluation of entrainment losses should be part of an ongoing entrainment research and monitoring program.	USFWS	
38	Appendix B.0	B-2	4-5	Salvage is a useful but unreliable measure of entrainment. Salvage may be used as an index of total total entrainment, but it should be corrected at least to account for pre-screen losses and fish salvage facility efficiency.	USFWS	
39	Appendix B.0	B-4	Table B-2	Are these short term entraiment effects? Needs also mid- and long-term effects based on a range of sea level rise projections. Besides, entrainment needs additional tables for predation and impingement. 100% screened does not necessarily mean fish friendy screen. Footnote of table: What is the baseline period for the effects in each water year type?	USFWS	

40	Appendix B.0	B-8	25-29	At some point, the Kimmerer analyses will need to be revised to estimate entrainment losses using empirically derived pre-scren losses for adult delta smelt (Castillo et al. in review). Pre-screen loss at the SWP is also dependent on residence time which can vary greatly among months. Ultimately, revising the pre-screen loss estimates will likely have an affect on the estimated population losses generated from the Kimmerer approach.	USFWS	
41	Appendix B.0	B-8	33-38	Without taking into account the effects of proposed water diversions and sea level rise, the statement that longfin sment entrainment will decline or remain the same cannot be supported.	USFWS	
42	Appendix B.0	B-9	7-11	Reference to the preliminary proposal is not compared to a current proposal and the interpretation is unclear. What is relevant is your current estimated loss for longfin smelt in dry years.	USFWS	
43	Appendix B.0	B-10	11-12	Impingement and associated predation cannot be 100% predicted prior to cosntruction even for the largest of the covered fish species.	USFWS	
44	Appendix B.0	B-10	18-19	This proposed monitoring must be long-term to account for anticipated sea level rise over the proposed duration of the project.	USFWS	
45	Appendix B.0	B-11	14-15	Entrainment is currently far from being accurately monitored due to overreliance on proxy measures of entrainment such as salvage and particle tracking models.	USFWS	
46	Appendix B.0	B-11	20-21	Recommend to show a table listing all SWP and CVP diversions and identifying those in which entrainment and impingement data are periodically generated.	USFWS	
47	Appendix B	B-5	20-21	A CHTR project (Jerry Morinaka. Stockton DFG office)showed that the great majority of adult delta smelt and about half of juvenile delta smelt survive the salvage process. Within the fish salvage facilities What still remains unknown is their survival upon release in the Delta.	USFWS	
48	Appendix B	B-12	1-3	Unusually high levels of salvage preceeded substantial declines of the delta smelt population indices in the early 1980's and 2000's. Therefore, entrainment is a major forcing factor controlling the population size of delta smelt. Entrainment is part of additional water-diversion mediated stressors, which have critical repercusions on the entire ecosystem.	USFWS	
49	Appendix B	B-21	Sec B.2.2	South delta diversions would be even more affected by sea level rise and likely increase entrainment of listed species. Removal of these facilities or at least retrofitting existing outdated CVP and SWP facilities could be a important step to reduce entrainment losses (lower pre-screen losses and increased fish facility efficiency).	USFWS	

50	Appendix B			Some of the statements made within the description of the north Delta intakes could be revised to more accurately reflect the proposed diversions and current agency regulations. Suggested revisions include: 1) Citation for California Department of Fish and Game should be 2000 rather than 2011. 2) Citation for National Marine Fisheries Service should read National Marine Fisheries Service-Southwest Region in 1997 rather than 2008. 3) The FFTT report [pages 22-24] provides some alternative language to that which is provided in this appendix for representing the permitting agencies criteria and guidance. 4) The sentence referring to the maximum approach velocity of 0.33 fps is misleading, based on our understanding that the diversions under this 'alternative (1)' would be designed and operated to a 0.2 fps approach velocity. Under those conditions, the maximum approach velocity of 0.33 fps would be irrelevant to mention or better clarified that it is in reference to the DFG and NMFS-SWR criteria.	USFWS	
51	B.3.4.1	B-35	9	The salvage density method seems to be applied to sturgeon, but no information is provided about how preprocessing of input data (monthly salvage information) was completed. Perhaps its like lamprey and description was just overlooked.	USBR	
52	B.3.4.2	B-37	16	How was normalization done for white sturgeon? CDFG has annual estimates of white sturgeon population abundance.	USBR	
53	B.2.2	B-21		It seems like the two baselines are not behaving the same in the April May spring period. This period is important to SJR Chinook and STH. It seems there is less exports in EBC2 during the spring. If this is true, what figures show this? These should be a sentence highlighting this as an explanation for the observed changes in exports in relationship to PP_ELT and PP_LLT discussed it this section.	USBR	
54	B4.1.1.1	B-71	**25**	This section should present entrainment results from dry and critical years from the CVP and SWP seperately. There is something going on surrounding the salvage eqtn (I believe due to the multiplier for prescreen loss in SWP) here that is leading to decreasing salvage at the CVP, but still increasing salvage at the SWP. This is important to note, because it could support finer tuning of a BDCP operational alternative during C and D years in April and May that only pumps from the CVP. What happens to entrainment in the PP when all April and May exports during C and D years are taken from the CVP?	USBR	

55	B.4.1.11	B-303	10	This section on Escape Ability starts with a discussion on velocities at the CVP/SWP sites where NPB may be contemplated in BDCP. This parargraph states that juvenile salmonid have "good swimming ability" but does not state what the escape ability is for these fish. Some narrative should touch upon whether "good swimming ability" is the same as "high escape ability". I think the important thing here is that the table states salmonids have high escape ability and overall barrier effectiveness is high, but if the velocities are as high as stated in the Escape ability paragraph, their burst speed may not be sufficient to make them escape entrainment at CCF or TFCF. This context- the statements about velocities at CCF and its intake canal, as well as, the burst speeds in B-244 suggest salmonids burst speed is only 30% of velocities at the intake canal. This cannot be equated to high overall potential barrier effectiveness.	USBR	
56	B.4.1.11	B-304	2	Other fish likely inhabit the Old River canal there like various basses and native predators like pikeminnow. These should be included in the explanation since the predaceous fish complex is likely larger than just striped bass and could be influenced by habitat restoration associated with BDCP objectives in this ROA.	USBR	
57	B.4.1.11	B-304	14	Targeted studies would be good. In fact many locations are being evaluated by DWR and Reclamation as part of an RPA in the current NMFS BO. It may be worth highlighting thiys since more information, particularly related to individual hydrodynamics, is a critical element of this RPA.	USBR	
58	B.5	B-363	32-34	I believe the narrative here about increased entrainment refers to Spring run Chinook, not winter run Chinook.	USBR	
59	Contents			Note that section numbering is off for several sections, including the following: B.1.1 Potential importance of entrainment B.1.2 How the Bay Delta Conservation Plan may affect entrainment B.2 Sources of entrainment (should be B.3) There are two B.2s, and two B.3s; therefore everything after the first B.2 will need to be adjusted. 3 subsections have no headings: Overall Change in SWP/CVP Exports under BDCP (B-27), SWP North Bay Aqueduct (B-27), Agricultural Diversions (B-29).	NMFS	
60	B.0	S B-6		What version of DPM was used (it is currently undergoing revision)? If the results in this appendix are based on the tables in the previous version of the EA, note that they do not match the native model output files. Any DPM results would be expected to be revised upon completion of the revised DPM model (expected late September).	NMFS	

61	B.2	B-5	Footnote	For completeness, include definition of impingement as an indication of how fish loss is handled at CWIS.	NMFS	
62	B.2	B-5	25	It seems unlikely that any intake structure can wholly eliminate entrainment. Perhaps "reduce" would be a better word here (otherwise results on north Delta in the rest of this section should show 0 entrainment).	NMFS	
63	B.1.1	B-10		For clarity, change y-axis labels to "Number of Fish Salvaged".	NMFS	
64	B.1.1	B.12	23	Discussion of a nonphysical barrier at CCF is new to this version of the Effects Analysis; details need to be included (perhaps in a different section) on the location and feasibility of such barriers at this location, especially given the potential high flowrates in to CCF.	NMFS	
65	B.1.1	B-12	13	CM1 - spell out Conservation Measure.	NMFS	
66	B.3	B-17	18	EBC w/o X2 is not modeled yet for ELT and LLT. Will it be, and will those results be incorporated?	NMFS	
67	B.2.3	B-24	4	Consider adding parenthetical "oceanward" after "northerly".	NMFS	
68	B.3	B-28		Remove negative signs, they are inconsistent with the characterization of diversion amounts in the text.	NMFS	
69	B.3.1	B-32	Table B-4	Adult green and white sturgeon should not be subject to entrainment. They are not included in analysis of results. Correct Table B-4 to indicate so.	NMFS	
70	B.3.2	B-33	Table B-5	Correct White Sturgeon Juvenile to indicate use of salvage-density method (used in analysis beginning on page B-265).	NMFS	
71	B.3.4.1	B-36	29	Indicate the bases of the prescreen predation losses?	NMFS	
72	B.3.4.3	B-37	26-29	Explanation of method beginning with "All salvage or loss densities…" is unclear. The description provided on B-38 line 16-21 provides a useful example and should be stated earlier.	NMFS	
73	B.3.4.5.1	B-41	4	Indicate why average Feb-June delta inflow was used. Were the regressions any different if a different time span was used?	NMFS	
74	B.3.4.1.1	B-47	Figure B-14	Make scales on both axes the same for the two graphs. These could also be combined and plotted on a single graph as two different series.	NMFS	
75	B.3.5.1.2	B-48	3-37	This section is confusing. It needs to be broken up into accessible sections for it to flow better and effectively convey the methodology. Consider describing the % adult entrainment equation first, and then the % larval-juvenile entrainment.	NMFS	
76	B.3.5.1.2	B-48	11-14	It is unclear if Miller developed these equations or if they were developed by ICF for the effects analysis effort.	NMFS	
77	B.3.5.1.2	B-48	16	Reference is made to Equation (1), but equations are not numbered.	NMFS	
78	B.3.5.1.2	B-48	25	The increasing trend is relative to time; state that in the text and refer to Figure B-15.	NMFS	
79	B.3.5.1.2	B-48	33	Should reference ot Figure B-15 be a reference to Figure B-16 instead?	NMFS	
80	B.3.5.1.2	B-49	Figure B-16	Label the y axis.	NMFS	

81	B3.5.2	B-51	8	If "The equation used" refers to the best-fit two-flow-term equation, replace with "The best-fit two-flow-term equation used in this analysis is:".	NMFS	
82	B.3.6.1	B-55	31	It is not clear from the description of the PTM effort if ag intakes are explicitly characterized in the PTM model setup. If not, how are they characterized, especially with regards to uncertainty of location and type?	NMFS	
83	B.3.6.1	B-55	37	What are the "numerous scenarios" representing (WYT? PP_ELT and PP_LLT?)? Provide brief explanation.	NMFS	
84	B.3.6.1	B-56	9	There needs to be a better description of the PTM (perhaps in a different section or appendix) that provides in-depth descriptions of model setup, particle insertion points, particle collection locations, boundary conditions, input data, etc. WRT methodology used in this appendix, weighting the PTM results by proportion of total area within each region or SKT distributions seems erroneous; how is this to "back-assigning" appropriate to identify a starting particle distribution?	NMFS	
85	B.3.6.1	B-60	19	"above" refers to a number, or to data that was previously presented? This needs to be clarified.	NMFS	
86	B.3.6.1.	B-60	12	13 PTM scenarios were selected and used in this analysis; note that they are a subset (Feb-June inclusive) of the 24 that were already run. Note that of these, Freeport flows > 20,000 cfs for only 8 of them; therefore NDD would not be operating for the remaining 5 that were modeled.	NMFS	
87	B.3.6.1	B-61	Figure B-21	Presentation of data is deceiving; make all flow y-axes and tickmarks uniform for all plots in this figure; likewise with RKM y-axes.	NMFS	
88	B.3.6.1	B-65	7	This suggests that the "uniform distribution" method results were not used, but they are commonly referred to in later sections. Clarify what analysis they were not used for.	NMFS	
89	B.4.1.2.1	B-80	27	Indicate where 500,000 comes from and whether it is supported/realistic.	NMFS	
90	B.4.1.2.2	B-99	Table B-45	Showing an average value on this table (and the following Table B-46) is potentially inappropriate; the modeled water years are not an equal distribution of water year type, so the "average" could be skewed by the different representations of the different water year types.	NMFS	
91	B.4.1.3.1	B-101	38	Indicate where 750,000 comes from and whether it is supported/realistic.	NMFS	
92	B.4.1.3	B-103	3	"Loss", or "entrainment", or "salvage"? Be consistent with terminology (see and compare with B-101 line 3 (entrainment); B-80 line 3 (entrainment loss); B-81 line 3 (loss); B-71 line 10; B-72 line 3; B-124 line 3; B-126 and B-127 line 3.	NMFS	

93	B.4.1.3.1	B-124	6	With regards to the spring and fall run length-at-date uncertainty, is it possible to evaluate this uncertainty by looking at the extremes? Could all spring really be fall, and if so how do fall results differ from what is already presented? What is the max percentage of fall that could be spring, and how do spring results change if that is assumed? What are the bounds on the certainty of the spring run that is presented (i.e., it is possible that up to 50% of the fish identified as spring run are in fact not)?	NMFS	
94	B.4.1.5.1	B-168	10	It was previously stated that the PTM uniform distribution methodology was not used (see p. B-65).	NMFS	
95	B.4.1.5.1	B-168	13-16	"Entrainment generally was greater for 60-day particle tracking, as would be expected. Kimmerer and Nobriga (2008) noted that growth of delta smelt over the period simulated during 60 days of particle tracking would result in better swimming ability and behavior less akin to passive particles." The second sentence does not support the first, and in fact argues against the case for PTM use. Should it read instead "Entrainment generally was greater for 60-day particle tracking, **as would be expected for buoyant passive particles. However,** Kimmerer and Nobriga (2008) ..."?	NMFS	
96	B.4.1.5	B-168	10	Uniform distribution, and other subsequently discussed distributions, imply a distribution of organisms. It is written to imply that this is the "starting" distribution, so this is where particles are assumed to have been at the start of the PTM run. But previous explanations imply a back-assignment of starting location to the results based on proportion of area in each region and the trawl surveys. This back-assignment doesn't seem right; where a particle ends up at the end of 30 or 60 days will very much depend on where it started, and those starting points should be set a priori.	NMFS	
97	B.4.1.5.1	B-189 and B 190	Table B-133 and B-134	Indicate how data was processed to provide the flow statistics in this table considering that there are several years of data within each water year type. For instance, for Wet years, is the "Median" flow the median value of all combined (daily or monthly) flows for all Wet years, or is it the average of the median (daily or monthly) flows for each of the Wet years? LIkewise for Table B-134, are the differences based on the average loss for one scenario for a given WYT vs the average loss for another scenario for the same given WYT?	NMFS	
98	B.4.1.5.2	B-197	12-16	The text does not seem to correspond to the plot that it references (Figure B-44). The explanation does not match the numbers depicted in the figure.	NMFS	

99	B.4.1.5.2	B-198	Figure B-44	First, it seems that EBC1 is not plotted. Next, this plot would better convey the information if the labels on "Cumulative Percent of Years" were flipped. As it is now, it suggests that PP leads to more entrainment than EBC. For instance, it implies that a 0.10 proportional loss occurs in 90% of years under PP_LLT and in 40% of years under EBC2. Also consider swapping the axes, putting cumulative percent of years on the x and proportional loss on the y. (Similar suggestions for Figures B-46, B-50, B-52, B-54, B-58)	NMFS	
100	B.4.1.5.2	B-201	4	Regarding references to Figures B-47 and B-45 and Tables B-148 and B-149: only some of the comparison results are the same for these two assumptions (e.g., EBC2_LLT vs PP_LLT); several are not (EBC1 vs PP_ELT). Clarify what it is you are trying to show by referencing these figures and tables in comparison of the two assumptions' results.	NMFS	
101	B.4.1.5.3	B-211	12-14	Indicate why adult entrainment losses were limited to wet and above normal years for EBC1 and EBC2 and no losses are expected for the other scenarios.	NMFS	
102	B.4.1.5.3	B-213	6-7	Indicate why adult entrainment losses were limited to wet and above normal years.	NMFS	
103	B.0	Summary B-1	3	This definition should be clarified. Do fish need to physically removed from the water to be entrained?	NMFS	
104	B.0	Summary B-3	1	There are some preliminary analyses of the recent study at G. Slough that should be reviewed once it is finalized	NMFS	
105	B.0.1	Summary B-4		Fall-run fry can occur in large numbers in the Delta in some years.	NMFS	
106	B.0.1	Summary B-4		How will we know if fry (or other life stages) are included in the analysis of juveniles?	NMFS	
107	B.0.1	Summary B-5		Are there no records for lamprey entrainment? ("NA" in every cell for the lamprey at the SWP/CVP facilities)	NMFS	
108	B.0.1	Summary B-6	8-9	Exports increase in some water years in April and May relative to the EBC due to no SJ I:E ratio in the preliminary project	NMFS	
109	B.0.1	Summary B-6	38-39	The very low estimates from the Delta Passage Model relative to the salvage-density method are troubling. They point to the need to re-run these numbers once the revised DPM is available. Also, the use of the Delta Passage model to estimate entrainment of spring run and winter run Chinook is questionable since it was parameterized using mostly data from late-fall run Chinook	NMFS	
110	B.0.1	Summary B-7	3	When giving percentages, please be very explicit in explaining exaclty what it's a percentage of; here, I assume it's 1% of the JPE in each year? When you say "of the population" is that of the juvenile population?	NMFS	
111	B.0.1	Summary B-11	3	Is it that there is no evidence for entrainment, or that these diversions simply aren't monitored?	NMFS	

112	B.0.1	Summary B-11	28-30	Yes, we will need to keep in mind that current species distributions are likely to change, especially for the late long term time frame	NMFS	
113	B.2.1	B-6	28-29	Why assume that fish are trying to avoid the intake? Many of these fish are smolts, and following net downstream flows to the ocean. They may assume that the intake is simply a channel leading to the ocean.	NMFS	
114	B.2.1	B-7	18-24	Since you cite two papers that argue that the relationship between exports and entrainment is non-linear, why not just accept this as the most likely reality?	NMFS	
115	B.2.1	B-8		In Fig B-1, add a link from river/tidal flow to size of the HZI; the relationship between river flow and hydraulic measures such as OMR flows is well established	NMFS	
116	B.1.1	B-10	?	Entrainment should be an even stronger focus given the reduced abundance of fish	NMFS	
117	B.1.1	B-10		Please add graphs for sturgeon and lamprey	NMFS	
118	B.1.1	B-12		The statements on impacts to water supply and economic costs are highly subjective and debateable. I would remove them.	NMFS	
119	B.1.2	B-12		Are the non-physical barriers at the entrance to CCF and DMC new proposals? Are they in addition to the proposed barriers at G. Slough and the Head of Old River?	NMFS	
120	B.2.3	B-27	8-9	Why would exports decrease in the LLT? Demand is likely to increase as population increases.	NMFS	
121	B.3.4.1	B-36	34	Louver losses of 50% for each of these species seems unlikely given the large difference in sizes. Are there no better estimates?	NMFS	
122	B.3.4.1	B-36	32	0% loss during transport? Really? How did they even measure that?	NMFS	
123	B.3.4.4	B-39	19-20	This is a big assumption. How about assuming its proportional to adult escapement and stocking levels?	NMFS	
124	B.3.5	B-45	8-9	There are significant relationships between OMR flows and entrainment for certain salmonid species and months; even for flows greater than -5,000 cfs. The relationship disappears when months are lumped.	NMFS	
125	B.3.5.3	B-52		This analysis (Fig B-18) uses average OMR flows over four months, has very low sample sizes (n=6 for winter-run, n=7 for spring-run), combines estimates of juveniles with estimates of adults (both of which have large estimation error) into one "rate", and is inconsistent in including or excluding hatchery and wild salmon. The power of this analysis to detect any real relationship is extremely low.	NMFS	
126	B.3.7	B-67	20-22	OMR flows (and therefore San Joaquin flows) should also influence salvage rate	NMFS	

127	B.3.7	B-67	31-38	Please provide more detail on this model of salvage for the San Joaquin. It seems odd that a model with 6 variables would be the best model. And why include Chipps catch and temperature if you're just going to hold them constant?	NMFS	
128	B.3.8	B-68	25-30	Please provide a more detailed discussion here. Especially on the effectiveness of the barriers at higher flows, and evaluation of predation associated with the barriers.	NMFS	
129	B.4.1.1	B-74		In Fig B-13, are the zero values for Feb and March at the CVP in PP_ELT correct? That would mean no exports at all from that facility in those months?	NMFS	
130	B.4.1.1	B-74		The estimated increased entrainment of some salmonid species in April and May in some years under the BDCP preliminary project relative to the EBC is still a major concern.	NMFS	
131	B.4.1.2.1	B-80	10	Here you mention normalizing to the adult population size. Earlier in the methods you describe using the JPE. Were both used? Please clarify.	NMFS	
132	B.4.1.4.1	B-124	9-10	The large difference in the distributions in Fig B-26 suggest either a difference in classification methods or sampling gear between the SWP and the CVP.	NMFS	
133	B.4.1.10.1	B-297	6-7	The large difference in salvage between the CVP and SWP again suggests that there are differences in sampling gear or pre-screen loss between the two facilities. One would expect the SWP to have higher salvage based on export levels alone.	NMFS	
134	B.4.1.10.1	B-298		Table B-240 is not necessary. A figure showing actual historical salvage of lamprey would be much more informative.	NMFS	
135	All	All		Table B-243. Please use the life stages: egg, alevin, fry, parr, smolt, adult for the salmonids. A "juvenile" steelhead can be anywhere from 25mm Fl to > 350mm Fl.	NMFS	
136	B.4.2.7	B-316	3-9	The analysis needs some description of the size of white sturgeon larvae, either from studies on the Sacramento or from the literature.	NMFS	
137	B.5	B-357	19-20	Raw salvage at the water diversions is readily monitored, but the actual total loss of all fish to entrainment is actually very difficult to estimate. This is because a huge number of fish are lost to factors that are not well quantified, such as pre-screen predation, loss when louvers are removed, louver deterrence efficiency, handling mortality, and post-release mortality.	NMFS	

138		7	6-12	Population impacts for South Delta entrainment could be greater under the PP in the years when it matters most. 46% of Calsim years were classified as Wet or AN, so roughly half the time the PP exports less in the south and entrainment is reduced when abundance of species is historically higher. The other half of years when fish abundance tends to decline the PP has a greater impact in the south under dual conveyance for Spring run and Fall run Chinook. A spell of dry years would then be more detrimental under the PP, so it is hard to conclude for some species that the overall reduction in South Delta entrainment when considering all year types is really a benefit.	NMFS	
139				The mechanism of entrainment for Sac Basin fish is through entry into the Central Delta. Sacramento River hydrology plays a key role for what percent of migrating fish may enter C Delta through reverse flows in vicinity of Georgianna Slough and DCC. The salvage density model does not factor in the additional entainment risk due to lowered flows in the Sac River under dual (DPM does not cover this adequately either) Dual conveyance should be analyzed for No Delta impacts, So Delta impacts and the change in river flows that could reroute more fish into the Central Delta. The last part is missing in the So Delta entrainment analysis under the PP. Though it is hard to tally the No Delta impacts since there is no past experience with this, we do know what flow levels facilitate entrainment into the C. Delta. Internal analysis shows this to be significantly impacted in spring months in the wetter hydrology unless No Delta diversions are managed beyond what the Hood Bypass Calsim modeling results show. The intent of the bypass rules is that no diversions that cause additional flow reversals are allowed. This limiting factor on North Delta diversions could potentially ramp up South Delta exports under the PP if criteria allow. So while the salvage density method may provide insight into EBC, it is probably not able to capture PP effects very accurately without factoring in all of the above.	NMFS	